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EXAMINER	
MOFFAT, JONATHAN	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/501,010	Applicant(s) HANSEN, PER WAABEN
	Examiner Jonathan Moffat	Art Unit 2863

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-76* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38,40,44-47,49-53,55,60-62,65 and 72-76* is/are rejected.

7)☐ Claim(s) *39-40,41-43,48,54,56-59,63-64,66-71* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 July 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/8/2004*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: In figures 14-16, items 100, 106, 108, 118, 218, 300, 302, 304, 306, 308, 310, 314, 318. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 1, 9, 21, 24, 29, 35, 43, 46, 48, 56, 57, 61, 68-70 are objected to because of the following informalities:

In the claims there are numerous minor and grammatical errors. The claims should be reviewed for accuracy. As an example, in claim 1 the phrase 'being multiplied by respective of each of the terms' should be rewritten.

Claims 1 and 24 contain language indicative of mathematical procedure that further defines the "correcting function". Dependent claims 9 and 29 offer a distinct form for these

functions. It is not clear to the examiner if the language of claims 9 and 29 are a more narrow limitation (i.e. an example "correcting function") OR a simple reformatting of the language in claims 1 and 24. It appears that the language of claims 1 and 24 is designed to include only those mathematical forms that will result in a correct 'correction function'. Claims 9 and 24 appear to limit the scope of the claimed invention in the same way as their parent claims. If this is the case the claims could preferably be amended such that claims 1 and 24 contain the mathematical forms of claims 9 and 29 as this appears a more clear and concise way to denote it.

Claims 9, 21, 29, 35, 43, 48, 56, 57, are objected to because of the use of brackets in equations. In claims the brackets indicate matter to be deleted. These brackets must be replaced.

In claim 46, the term 'officially recognized' is not substantially limiting.

In claim 61, a set is disclosed for use in carrying out the method of claim 1. It is assumed by the examiner that the response property of each of the stable objects in that set are the same as the response monitored in the method of claim 1. It would be appreciated if the language of claim 61 were amended to properly reflect this.

In claims 68-70 there is a lack of antecedent basis in the claims for further narrowing of the limitation of a 'prescribed period' as there is no mention of any period in the preceding claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-23 are rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility. The method disclosed in claims 1-23 appears to be incomplete by itself and appears to be an intermediate step. It discloses a process up to determining s calibration algorithm and storing it. It does not, however, disclose what is to be done with this algorithm and therefore lacks a tangible and useful real-world result. Although a calibration algorithm is useful, it is not a complete method in and of itself as it would require further steps to be useful in the real world (i.e. applying said algorithm to correct measurements).

Claims 24-37 are rejected under 35 U.S.C. 101 because the claimed invention lacks a real and tangible result. The method disclosed in claims 24-37 discloses a process up to determining corrected responses but the language of these claims is ungrounded in a real-world application. Although the intention is to use this method in an X-ray inspection system as in claim 1, the environment of operation is not part of the claimed limitation. The method of claims 24-37 is then only a mathematical algorithm without a tangible result. The claim would become statutory if the step of 'providing a corrected response' were modified to include storing, displaying, or otherwise using said corrected response.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1.

Claims 1-2, 4-6, 15-16, 19, 22, 24, 26, 30, 32, 36, 38, 40, 44-47, 49-53, 55, 60-62, 65, 72-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kowalski (US pat 5459677) in view of Shenk (US pat 4866644) and Henriksen (US pat 4168431).

With respect to claim 1, Kowalski discloses a method comprising:

1) Obtaining, for a plurality of stable objects, a set of responses comprising one or more pairs of related responses representing measurements in the at least two spectral ranges performed with the slave instrument ant a set of responses, comprising one or more pair pairs of related responses representing measurements in the at least two spectral ranges performed with a master instrument (Figs 5a-b).

2) Wherein a pair of related responses of the master instrument corresponds to each pair of related responses of the slave instrument (Figs 5a-b).

3) Wherein each element in the corresponding pair of responses of the master instrument corresponds to an element in each pair of responses of the slave instrument (Figs 5a-b).

4) Determining, based on the sets of responses a correcting function, the correction function being a functional relationship the master instrument and the slave instrument (Fig 2a).

With respect to claim 4, Kowalski discloses determination of the correction function is being based on a regression method (column 1 lines 50-67).

With respect to claim 5, Kowalski discloses the regression method is selected from the group consisting of principal component regression, multiple linear regression, partial least squares regression, and artificial neural networks (column 1 lines 50-67).

With respect to claims 6, 26, 40, Kowalski discloses a correcting function.

With respect to claims 16 and 30, Kowalski discloses each response is an intensity (Figs 5-6).

With respect to claims 19 and 32, Kowalski discloses that each response is an absorbance being defined as the negative logarithm to a transmittance (column 17 lines 45-50).

With respect to claim 24, Kowalski discloses a method comprising:

1) Determining, based on measurements with the slave instrument, a pair of related responses (Fig 2a item 50).

2) Determining a correction function, the correction function being a functional relationship between a master instrument and a slave instrument (Fig 2a).

3) Providing a corrected high response (Fig 4b).

4) Calculating the corrected response and thereby providing a set of corrected responses (Fig 4b).

With respect to claim 38, Kowalski teaches determining corrected responses (Fig 2a) and determining a physical quantity by applying a calibrated functional relationship between the corrected values and a physical quantity on said corrected responses (Fig 4b).

With respect to claim 44, Kowalski discloses the calibration model is obtained by exposing the master instrument to a plurality of well-defined objects (Fig 2a items 40 and 52).

With respect to claim 45, Kowalski discloses the well-defined objects are defined such that physical properties of the objects have been established by a chemical process (column 7 lines 29-34).

With respect to claim 46, Kowalski discloses the chemical process is an officially recognized reference method for the determination of the physical properties (column 7 lines 29-34).

With respect to claims 47 and 55, Kowalski discloses each of the responses is one of: an intensity, a transmittance derived as a ratio between intensity resulting from measuring an object and a reference intensity, an absorbance defined as the negative logarithm to a transmittance, and a reflectance expressing the reflectance from the surface of an object, the reflectance being linearized using the Kubelka-Munk transform (Figs 5-6).

With respect to claim 49, Kowalski discloses:

3) Determining, for each area of the object, the objects response (Figs 2b and 4b).

4) Corrected the responses (Figs 2b and 4b).

5) Determining the physical quantity by applying a calibrated functional relationship between the corrected responses and a physical quantity on said corrected responses (Fig 4b).

With respect to claim 52, Kowalski discloses an apparatus comprising:

1) A computer (column 12 lines 24-27), and responses of the master instrument ant/or the responses of the slave instrument (Fig 2a).

2) A computer (column 12 lines 24-27) and a correction function, the correcting function being a functional relationship between the master instrument and the slave instrument (Fig 2a).

3) A computer on which to determine the calibration values (column 12 lines 24-27).

With respect to claim 53, Kowalski discloses electromagnetic radiation comprising rays (column 5 lines 39-50).

With respect to claim 61, Kowalski discloses a set comprising one or more stable objects, each object comprising at least two different chemical compositions which are substantially stable and each stable object having a response property (Fig 2a item 40 and 52 and column 7 lines 30-37).

With respect to claim 62, Kowalski discloses the response property is absorbance (column 17 lines 45-50).

With respect to claims 72-76, Kowalski discloses the number of stable object in the set of stable objects is at least 26 (Fig 7).

With respect to claim 1, Kowalski fails to disclose:

4) Determining, based on the sets of responses a correcting function, the correction function being a functional relationship between a ratio of related responses of the master instrument and a sum of a plurality of terms, each term being a product of a correcting coefficient and powers of related responses of the slave instrument, wherein each response raised to a power being a positive or negative real number, or zero, thereby determining a first set of correcting coefficients being multiplied bv respective of each of the terms.

5) Storing the first set of correcting coefficients in a memory means included in or adapted for communication with a data processing unit included in or adapted for communication with the slave instrument.

With respect to claim 2, Kowalski fails to disclose X-ray radiation.

With respect to claims 6, 26, 40, Kowalski fails to disclose the correcting function comprises a plurality of terms of the set form.

With respect to claim 15, Kowalski fails to disclose measurements on objects being conveyed.

With respect to claims 22 and 36, Kowalski fails to disclose monitoring reflectance.

With respect to claim 24, Kowalski fails to disclose:

2) Determining a ratio using a correction function, the correction function being a functional relationship between a ratio of related responses of a master instrument and a sum of a plurality of terms, each term of the plurality of terms being a product of a correcting coefficient and powers of related responses of the slave instrument wherein each response is raised to a power being a positive or negative real number, or zero.

3) Providing a corrected high response where it is substantially equal to the slave high response, or the corrected high response is determined using a further correcting function correlating the high correction and slave responses.

4) Calculating the corrected low response as equal to the corrected high response times the ratio of the low and high corrected responses.

With respect to claim 49, Kowalski fails to disclose:

1) Scanning substantially all or all of the object using X-ray beams having at least two energy levels, the at least two energy levels including a low energy level and a high energy level, the high energy level being higher relatively to the low energy level.

2) Detecting the X-ray beams having passed through the object for a plurality of areas of the object.

With respect to claims 50-51, Kowalski fails to disclose the physical quantity is fat content in food.

With respect to claim 52, Kowalski fails to disclose:

1) An accessing unit configured to access a memory, wherein the responses of the master instrument ant/or the responses of the slave instrument are stored ().

2) A processor configured to determine, based on the sets of responses, a correction function, the correcting function being a functional relationship between a ratio of related responses of the master instrument and a sum of a plurality of terms. each term being a product of a correction coefficient and powers of related responses of the slave instrument wherein each response is raised to a power being a positive or negative real number, or zero, there-by determining a first set of correcting coefficients being multiplied bv each of the terms.

3) A storage unit configured to store the first set of correction coefficients.

With respect to claim 60, Kowalski fails to disclose a storage unit.

With respect to claim 65, Kowalski fails to disclose the stable objects have varying thickness and/or areal density.

Henriksen teaches, with respect to claim 1:

4) Determining, based on the sets of responses a correcting function, the correction function being a functional relationship between a ratio of related responses of the master instrument and a sum of a plurality of terms, each term being a product of a correcting coefficient and powers of related responses of the slave instrument, wherein each response raised to a power being a positive or negative real number, or zero, thereby determining a first set of correcting coefficients being multiplied bv respective of each of the terms (Fig 3).

It would have been obvious to one of ordinary skill in the art to modify the method of Kowalski to determine a statistically-based equation through storing correction coefficients as taught by Henriksen. A response equation requires less storage space on a disk than a table of correction values and allows interpolation between measured points such that any input value can be corrected.

Henriksen teaches, with respect to claim 2, X-rays (Fig 1 item 13).

It would have been obvious to one of ordinary skill in the art to apply the method of Kowalski to a multiple energy level X-ray system as taught by Henriksen. Kowalski discloses that the method will work on any process and, as an example, cites the absorption of energy (column 5). X-ray systems are known and utilized in the art for inspection because they can penetrate through objects better than visible light.

Henriksen teaches, with respect to claims 6, 26, 40, the correcting function comprises a plurality of terms of the set form (Fig 3 and column 2 lines 29-55). Since the powers of the terms can include 0 as m_1 and 1 as n_1, it is within the range of interpretation that the term in question be simply Q_{low}.

It would have been obvious to one of ordinary skill in the art to modify the method of Kowalski to determine a statistically-based equation through storing correction coefficients as taught by Henriksen. A response equation requires less storage space on a disk than a table of correction values and allows interpolation between measured points such that any input value can be corrected.

Henriksen teaches, with respect to claim 15, Kowalski fails to disclose measurements on objects being conveyed (column2 lines 45-49).

It would have been obvious to one of ordinary skill in the art to apply the method of Kowalski to determining responses from conveyed goods as taught by Henriksen. Kowalski discloses that the method will work on any process and, as an example, cites the absorption of energy (column 5). Government standards for food inspection require consistence between inspection sites. The method of Kowalski, which ensures devices are calibrated together, would be well-suited to this issue.

Henriksen teaches, with respect to claim 24:

2) Determining a ratio using a correction function, the correction function being a functional relationship between a ratio of related responses of a master instrument and a sum of a plurality of terms, each term of the plurality of terms being a product of a correcting coefficient and powers of related responses of the slave instrument wherein each response is raised to a power being a positive or negative real number, or zero (Fig 3).

It would have been obvious to one of ordinary skill in the art to modify the method of Kowalski to determine a statistically-based equation through storing correction coefficients as taught by Henriksen. A response equation requires less storage space on a disk than a table of correction values and allows interpolation between measured points such that any input value can be corrected.

Henriksen teaches, with respect to claim 49:

1) Scanning substantially all or all of the object using X-ray beams having at least two energy levels, the at least two energy levels including a low energy level and a high energy level, the high energy level being higher relatively to the low energy level.

2) Detecting the X-ray beams having passed through the object for a plurality of areas of the object.

It would have been obvious to one of ordinary skill in the art to apply the method of Kowalski to a multiple energy level X-ray system as taught by Henriksen. Kowalski discloses that the method will work on any process and, as an example, cites the absorption of energy (column 5). X-ray systems are known and utilized in the art for inspection because they can penetrate through objects better than visible light.

Henriksen teaches, with respect to claims 50-51, the physical quantity is fat content in food (column 1).

It would have been obvious to one of ordinary skill in the art to apply the method of Kowalski to determining fat-content as taught by Henriksen. Kowalski discloses that the method will work on any process and, as an example, cites the absorption of energy (column 5). Government standards for food inspection require consistence between inspection sites. The method of Kowalski, which ensures devices are calibrated together, would be well-suited to this issue.

Henriksen teaches, with respect to claim 52:

1) An accessing unit configured to access a memory, wherein the responses of the master instrument ant/or the responses of the slave instrument are stored (Fig 1 item 27).

2) A processor (Fig 1 item 27) configured to determine, based on the sets of responses, a correction function, the correcting function being a functional relationship between a ratio of related responses of the master instrument and a sum of a plurality of terms, each term being a product of a correction coefficient and powers of related responses of the slave instrument

wherein each response is raised to a power being a positive or negative real number, or zero, there-by determining a first set of correcting coefficients being multiplied bv each of the terms (Fig 2).

3) A storage unit configured to store the first set of correction coefficients (Fig 1 item 27).

It would have been obvious to one of ordinary skill in the art to modify the method of Kowalski to determine a statistically-based equation through storing correction coefficients as taught by Henriksen. A response equation requires less storage space on a disk than a table of correction values and allows interpolation between measured points such that any input value can be corrected. Further it would have been obvious to one of ordinary skill in the art that the method of Kowalski be performed in a computer system with a processor and memory components in order to process and store data.

Henriksen teaches, with respect to claim 65, the stable objects have varying thickness and/or areal density (column 2 lines 3-28).

It would have been obvious to one of ordinary skill in the art to apply the method of Kowalski to determining fat-content in varied density and size samples of food as taught by Henriksen. Kowalski discloses that the method will work on any process and, as an example, cites the absorption of energy (column 5). Government standards for food inspection require consistence between inspection sites. The method of Kowalski, which ensures devices are calibrated together, would be well-suited to this issue.

Shenk teaches, with respect to claim 1:

5) Storing the first set of correcting coefficients in a memory means included in or adapted for communication with a data processing unit included in or adapted for communication with the slave instrument (Fig 2 item 42).

It would have been obvious to one of ordinary skill in the art to modify the system of Kowalski by storing calibration results as taught by Shenk. As it stands Kowalski discloses transferring calibration results from tool to tool which would be made substantially simpler by storing the results before the transfer.

Shenk teaches, with respect to claim 2:

3) Providing a corrected high response where it is substantially equal to the slave high response, or the corrected high response is determined using a further correcting function correlating the high correction and slave responses (Fig 2).

4) Calculating the corrected low response as equal to the corrected high response times the ratio of the low and high corrected responses (Fig 2).

It would have been obvious to one of ordinary skill in the art of modify the method of Kowalski by treating the systems as master (reference) and slave (target) systems and correcting the response of the slave to closer represent that of the master as taught by Shenk. This requires that only one system be 'perfect' in its response or, alternatively, that the errors of only one system be incorporated into measurements (the master). This creates standardization between all subservient systems to the controlled master.

Shenk teaches, with respect to claim 52:

3) Storing the first set of correcting coefficients in a memory means (Fig 2 item 42).

It would have been obvious to one of ordinary skill in the art to modify the system of Kowalski by storing calibration results as taught by Shenk. As it stands Kowalski discloses transferring calibration results from tool to tool which would be made substantially simpler by storing the results before the transfer.

Shenk teaches, with respect to claims 22 and 36, each of the responses is a reflectance expressing the reflectance from the surface of a respective of the objects (column 3 lines 37-46).

It would have been obvious to one of ordinary skill in the art to modify the system of Kowalski to work off of reflectance instead of absorption as taught by Shenk. Fundamentally the two concepts are the same, using the same sorts of emitters and sensors. The difference is mainly the location of the sensors relative to the object. Measuring reflectance would allow for lower power radiation to be used since it would not need to penetrate the sample.

Shenk teaches, with respect to claim 60, a storage unit (Fig 2 item 42).

It would have been obvious to one of ordinary skill in the art to modify the system of Kowalski by storing calibration results as taught by Shenk. As it stands Kowalski discloses transferring calibration results from tool to tool which would be made substantially simpler by storing the results before the transfer.

2.

Claims 18, 32 rejected under 35 U.S.C. 103(a) as being unpatentable over Kowalski (US pat 5459677), Shenk (US pat 4866644), and Henriksen (US pat 4168431) as applied to claims 1, 24 above, and further in view of Lodder (US pat 4893253).

With respect to claims 18, 32, Kowalski discloses monitoring intensity.

With respect to claims 18, 32, Kowalski, Shenk, and Henriksen fail to discloses monitoring transmittance being a ratio between an intensity resulting from measuring an object and a reference intensity.

Lodder teaches, with respect to claims 18, 32, monitoring transmittance being a ratio between an intensity resulting from measuring an object and a reference intensity (column 5 lines 45-64).

It would have been obvious to one of ordinary skill in the art to modify the method of Kowalski, Shenk, and Henriksen to monitor transmittance as taught by Lodder. Kowalski discloses that the method will work on any process that can collect suitable data and mentions intensity as an example. Transmittance is a value calculated as a result of measured intensity and is therefore obvious as a chosen response to monitor.

Conclusion

Claims 39-40,41-42, 54, 57-59, 63-64, 66-67, 71 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Moffat whose telephone number is (571) 272-2255. The examiner can normally be reached on Mon-Fri, from 7:15-3:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JM

JBarlow

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